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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/810,206	03/16/2001	Javed Khan	P04803US0	8131

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DES MOINES, IA 50309-2721

EXAMINER

CHANG, RICK KILTAE

ART UNIT

PAPER NUMBER

3729

DATE MAILED: 03/12/2004

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/810,206

Applicant(s)

KHAN, JAVED

Examiner

Rick K. Chang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 8-13 and 15-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 8-13 and 15-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 1/30/04 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 8-10 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Riddel et al (US 3,574,930) in view of Rosen et al (US 6,099,164), and further in view of Miyake et al (US 4,423,403) and Singh (US 6,309,695).

Riddel discloses selecting a desired or standardized physical size of the thermistor (Figs. show a thermistor assembly and col. 1, lines 26-36); selecting a mixture of metal film materials (col. 2, lines 54-64); depositing the mixture of metal film materials (14) on a substrate (10) using a thin film process (A printing process is a thin film process because each layer is thin and deposited independently of each other).

Riddle fails to disclose selecting a negative temperature coefficient of resistance versus temperature curve and sputter depositing a mixture of metal oxides on an alumina substrate.

Rosen discloses selecting a negative temperature coefficient of resistance versus temperature curve and associating the curve to the thermistor (Figs. 8-9) thereby properly selecting the resistive material respect to temperature for a desired thermistor.

Miyake discloses sputter depositing a mixture of metal oxide film (col. 8, lines 39-40).

Singh discloses providing the alumina substrate (1).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Riddle by selecting a negative temperature coefficient of resistance versus temperature curve, as taught by Rosen, for the purpose of properly selecting the resistive material respect to temperature for a desired thermistor.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Riddle by sputter depositing a mixture of metal oxide film, as taught by Miyake, for the purpose providing an evenly distributed metal oxide layer.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Riddle by providing the alumina substrate, as taught by Singh, for the purpose of withstanding high temperature.

Further, Riddle discloses the claimed invention except for selecting a second resistance versus temperature curve associated with a second type of negative temperature coefficient thermistor; selecting a second mixture of metal film materials; and depositing the materials on the second substrate. It would have been obvious to one ordinary skill in the art at the time the invention was made to selecting a second resistance versus temperature curve associated with a

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second type of negative temperature coefficient thermistor; selecting a second mixture of metal film materials; and depositing the materials on the second substrate, since it has been held that mere duplication of the essential working parts of a thermistor to manufacture another thermistor involves only routine skill in the art.

4. Claims 11-13 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Riddel et al (US 3,574,930)/Rosen et al (US 6,099,164)/Miyake et al (US 4,423,403) in view of Kimura et al (US 6,314,637), and further in view of Bunshah et al (Deposition Technologies for Films and Coatings) and Plough, Jr. et al (US 4,498,071).

Riddel/Rosen/Miyake disclose planarizing a substrate (layer 12); depositing conductor terminals (13 and 15); and heat treating.

Riddel/Rosen/Miyake fail to disclose sputtering to deposit conductor terminals; sputtering a passivation layer; and sputtering silicon nitride film and thermistor.

Kimura discloses depositing a passivation layer (4) thereby protecting the metal film material from the environment.

Plough discloses depositing silicon nitride film (14A) thereby providing a good surface for the resistive material to adhere.

Bunshah discloses sputtering is used to deposit material on a substrate.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Riddel/Rosen/Miyake by sputtering to deposit conductor terminals; sputtering a passivation layer; and sputtering silicon nitride film and thermistor, as taught by Kimura, Plough and Bunshah, for the purpose of protecting the metal film material from the

environment; providing a good surface for the resistive material to adhere; and deposit material on a substrate.

5. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Riddel et al (US 3,574,930) in view of Bunshah et al (Deposition Technologies for Films and Coatings).

Riddle discloses depositing the mixture of metal film materials (14) on a substrate (10).

Riddle fails to disclose sputtering.

Bunshah discloses sputtering is used to deposit thin film materials on a substrate.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Riddel by sputtering to deposit the mixture of metal film materials on a substrate, as taught by Bunshah, for the purpose of depositing thin film materials on a substrate.

Response to Arguments

6. Applicant's arguments with respect to claims 8-13 and 15-17 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

7. **Please provide reference numerals (either in parentheses next to the claimed limitation or in a table format with one column listing the claimed limitation and another column listing corresponding reference numerals in the remark section of the response to the Office Action) to all the claimed limitations as well as support in the disclosure for better clarity. Applicants are duly reminded that a full and proper response to this Office Action that includes any amendment to the claims and specification of the application as originally filed requires that the applicant point out the support for any amendment made to the disclosure, including the claims. See 37 CFR 1.111 and MPEP 2163.06.**

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8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rick K. Chang whose telephone number is (703) 308-4784. The examiner can normally be reached on 5:30 AM to 1:30 PM, Monday through Thursday.

The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9302 for regular communications and (703) 872-9303 for After Final communications.

A handwritten signature in black ink, appearing to be 'Richard Chang', written over a horizontal line.

**RICHARD CHANG
PRIMARY EXAMINER**

RC
March 9, 2004